

Work Order ID 75634

75634

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October-27-11 11:38:38 AM

Item ID: D6009-129 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Crosstube Material
 Start Date: 27/10/2011 Start Qty: 20.00 ***20*** Cust Item ID:
 Required Date: 29/03/2013 Req'd Qty: 20.00 ***20*** Customer:
 Reference:

Approvals: Process Plan: MLJ Date: 11/10/27 Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D6009	Rev A								

100 PURCHASING 0.00
100
 Purchasing Memo 0.00
 Purchasing Issue P/O: 13346
 a) Order as per Dwg D6009
 b) Material: 3.500 x 0.625 wall 7075-T6/T6511 (WW-T-700/7 or QQ-A-225/9 or QQ-A-200/11) seamless aluminum tube
 c) Minimum ultimate tensile strength = 77 ksi
 d) Minimum tensile yield strength = 66 ksi
 e) Tolerance are per ASTM B210 (see details on Dwg D6009)
 f) Material certification required

CD 11/11/03 20

110 Receive & Inspect for Damage & Mat'l Certs 0.00
110
 Packaging Memo 0.00
 Packaging Ensure material certification is attached

P-13/01/3 61

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 75634***75634***

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October-27-11 11:38:38 AM

Item ID: D6009-129 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Crosstube Material
Start Date: 27/10/2011 Start Qty: 20.00 ***20*** Cust Item ID:
Required Date: 29/03/2013 Req'd Qty: 20.00 ***20*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120 *120* QC Quality Control	QC6- Inspect dimensions to drawing Memo Ensure Material certification comply to Dwg D6009 <i>* see attached mat inspection sheet</i>	0.00 0.00				<i>x21</i> <i>plc</i>			
140 *140* Packaging Packaging	Identify as per dwg & Stock Location: <u>L6015</u> Memo	0.00 0.00							
150 *150* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.00							

*13/1/17**13-01-16*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

October-27-11 11:38:42 AM

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75634

D6009-129

Required Qty: 20.00

IPP Rev:B remove

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6009-129P		Purchased	No			110	Each	0.0000	1	20			
D6009-129P									**			10/13/01/03	(2)
Crosstube Material													

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



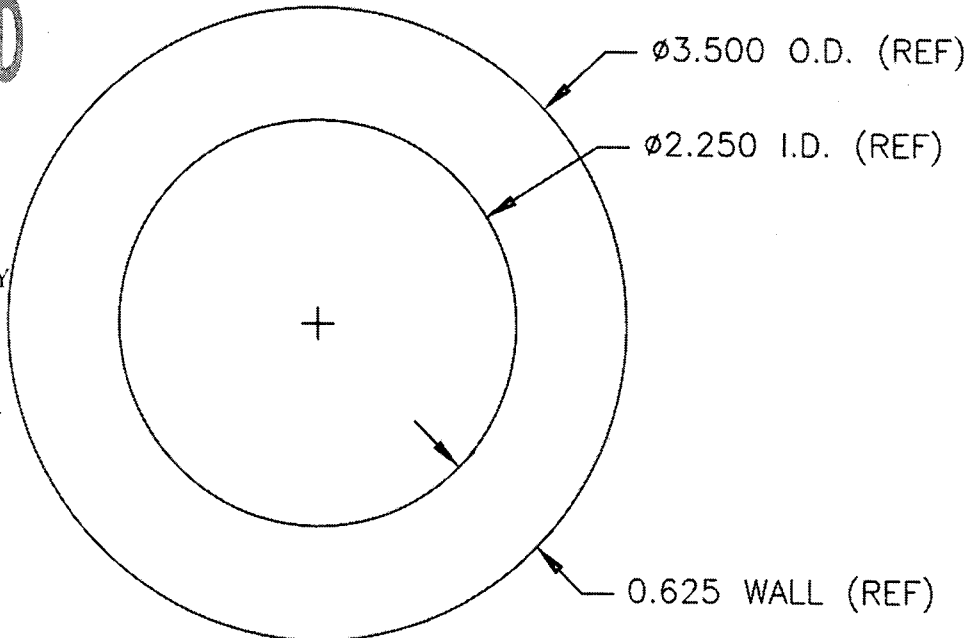
DESIGN #	DRAWN BY RT	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED #	APPROVED #	DRAWING NO. D6009	REV. A SHEET 1 OF 1
DATE 01.08.16		TITLE CROSSTUBE MATERIAL	SCALE 1:1
A	01.08.16	NEW ISSUE	

SPECIFICATION CONTROL DRAWING

RELEASED
01.08.17

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 75634

RLJ
11/10/27



NOTES

- 1) D6009-XXX CROSSTUBE
LENGTH

WHERE XXX IS LENGTH IN INCHES
EG. 129" LONG TUBE: D6009-129

- 2) MATERIAL: 3.500 OD x 0.625 WALL 7075-T6/T6511 (WW-T-700/7 OR QQ-A-225/9 OR QQ-A-200/11) SEAMLESS ALUMINUM TUBE.
MINIMUM ULTIMATE TENSILE STRENGTH = 77 ksi
MINIMUM YIELD TENSILE STRENGTH = 66 ksi
- 3) TOLERANCES ARE PER ASTM B210 AS FOLLOWS:
O.D.: ± 0.008 MEAN (± 0.016 INCLUDING OVALITY)
WALL: ± 0.020 MEAN (± 0.063 INCLUDING ECCENTRICITY)
LENGTH: XXX $+0.188/-0.000$
STRAIGHTNESS: 0.010" DEVIATION / 12" LENGTH
- 4) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 5) CHEMICAL CONVERSION COAT PER DART QSI 005 4.1

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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



Boxmarking:

We hereby declare that the wooden packing material are totally free from bark and apparently

free from live plant pests

S:\VERSAND\USA_Packliste\44989_300

Abnahmeprüfzeugnis 3.1 - DIN EN 10204:2005

Inspection Certificate 3.1 - DIN EN 10204:2005 / Certificat de Reception 3.1- DIN EN 10204:2005

Kunde: Dart Aerospace Ltd.
Client:

1270 Aberdeen Street
K6A1K7 Hawkesbury, ON Canada

Zeugnisnummer: 1538/12

Cert No. / No. du certificat:

Bestellnummer: PO 15346

Order No. / No. de commande

Auftrag: 44989/300

Our Reference/Notre Reference:

Produkt: Rohre nahtlos gepresst

Product / Produit: Tubes seamless extruded

Spezifikation: AMS - QQ - A - 200/11; Spezifikation Dart Aerospace D6009

Specification:

Werkstoff: 7075

Alloy/Alliage:

Zustand: T 6511

Temper/État

Abmessung: 3,500 INCH x 2,250 INCH x 0,625 INCH x 129,000 INCH

Size / Dimension: D6009-129 3.500 X 0.625 X 129

Kennzeichnung: CERT.NO. 1538/12 - ALUnna - 7075 - T6511 - CAST NO. 84379 - AMS - QQ - A - 200/11 - 3.500" OD X 0.625" WALL - HEAT LOT NO. 802540 - ALUnnaORDER CONF.NO. 44989/300-1 - P.O. 15346

Marking/Marquage:

Lieferung

Delivered Material / Matériel délivré:

pcs.

21

lbs

1572

Country of Manufacture: Germany

Products are in accordance with applicable RoHS

1. Chemische Analyse

Chemical Analysis / analyse chimique

Other elements
each max. 0,05 %, total % 0,15

	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Pb	Zr	Bi	Sn	Ni
Charge/ min.			1,2		2,1	0,18	5,1						
Cast No. max.	0,40	0,50	2,0	0,30	2,9	0,28	6,1	0,20					
84379	0,05	0,12	1,47	0,09	2,44	0,18	5,88	0,04	0,01	0,02			0,0002

Hydrogen content: <0,10

ccm/100 g Al Elements without indication < 0,01 %

country of melt manufacturer: Germany

2. Mechanische Eigenschaften

Mechanical Properties / Valeurs Mécaniques

Anforderungen Requirements	tensile (Rm) ksi	yield (Rp0,2) ksi	elongation 2" %	elongation A %	Hardness HB	Heat Lot No.
min.	77,0	66,0	7,0			
max.						
1	89,755	82,070	11,0			802540
2	88,450	80,910	10,0			
3	87,290	79,895	12,0			

RMS: outside 25 - max. 16,0 µ"

Ergebnis der Prüfungen:

Es wird bestätigt, daß die Lieferung geprüft wurde und den Vereinbarungen bei der Bestellannahme entspricht

Test results:

We confirm that the delivery has been tested and applies to the agreements made on receipt of the order

Resultats:

Nous confirmons que la livraison a été contrôlée et correspond avec les conventions faites à la réception de la commande

Tischke



Certified acc. DIN EN ISO 9001:2008 and DIN EN 9100:2003

valid until 2013-11-10

Cert.- Reg. No.: 001959 QM08; 001959 ASH



ALUnna

[Signature]

06.11.2012

Aluminiumwerk Unna AG, Uelzener Weg 36, 59425 Unna, Germany

Abnahmebeauftragter

MEAN OUTSIDE DIAMETER PERMISSIBLE ± 0.006

Tube #	Actual A	Actual B	Mean	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	3.493	3.497	3.495	3.500	0.006	3.494	3.499	-0.001	-0.004
2	3.493	3.500	3.497	3.500	0.006	3.494	3.499	-0.002	-0.002
3	3.498	3.498	3.498	3.500	0.006	3.494	3.504	0.004	-0.006
4	3.494	3.497	3.496	3.500	0.006	3.494	3.500	0.001	-0.005
5	3.490	3.495	3.493	3.500	0.006	3.494	3.496	-0.002	-0.003
6	3.491	3.500	3.496	3.500	0.006	3.494	3.497	-0.001	-0.002
7	3.490	3.497	3.494	3.500	0.006	3.494	3.496	-0.001	-0.002
8	3.491	3.496	3.494	3.500	0.006	3.494	3.497	-0.001	-0.003
9	3.493	3.501	3.497	3.500	0.006	3.494	3.499	0.003	-0.002
10	3.495	3.501	3.498	3.500	0.006	3.494	3.501	0.004	-0.003
11	3.490	3.499	3.495	3.500	0.006	3.494	3.496	0.001	-0.001
12									
13									
14									
15									
16									

OUTSIDE DIA. Permissible (with Ovality) ± 0.012

Tube #	Actual A	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	3.493	3.500	0.012	3.488	3.512	0.005	-0.019
2	3.493	3.500	0.012	3.488	3.512	0.005	-0.019
3	3.498	3.500	0.012	3.488	3.512	0.010	-0.014
4	3.494	3.500	0.012	3.488	3.512	0.006	-0.018
5	3.490	3.500	0.012	3.488	3.512	0.002	-0.022
6	3.491	3.500	0.012	3.488	3.512	0.003	-0.021
7	3.490	3.500	0.012	3.488	3.512	0.002	-0.022
8	3.491	3.500	0.012	3.488	3.512	0.003	-0.021
9	3.493	3.500	0.012	3.488	3.512	0.005	-0.019
10	3.495	3.500	0.012	3.488	3.512	0.007	-0.017
11	3.490	3.500	0.012	3.488	3.512	0.002	-0.022
12							
13							
14							
15							
16							

OUTSIDE DIA. Permissible (with Ovality) ± 0.012

Tube #	Actual B	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	3.497	3.500	0.012	3.488	3.512	0.009	-0.015
2	3.500	3.500	0.012	3.488	3.512	0.012	-0.012
3	3.498	3.500	0.012	3.488	3.512	0.010	-0.014
4	3.497	3.500	0.012	3.488	3.512	0.009	-0.015
5	3.495	3.500	0.012	3.488	3.512	0.007	-0.017
6	3.500	3.500	0.012	3.488	3.512	0.012	-0.012
7	3.497	3.500	0.012	3.488	3.512	0.009	-0.015
8	3.496	3.500	0.012	3.488	3.512	0.008	-0.016
9	3.501	3.500	0.012	3.488	3.512	0.013	-0.011
10	3.501	3.500	0.012	3.488	3.512	0.013	-0.011
11	3.499	3.500	0.012	3.488	3.512	0.011	-0.013
12							
13							
14							
15							
16							

MEAN OUTSIDE DIAMETER PERMISSIBLE ± 0.006

Tube #	Actual A	Actual B	Mean	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	3.491	3.500	3.496	3.500	0.006	3.494	3.497	-0.001	-0.002
2	3.493	3.496	3.495	3.500	0.006	3.494	3.499	-0.001	-0.004
3	3.487	3.497	3.492	3.500	0.006	3.494	3.493	-0.002	-0.001
4	3.498	3.494	3.496	3.500	0.006	3.494	3.504	0.002	-0.008
5	3.494	3.497	3.496	3.500	0.006	3.494	3.500	0.001	-0.005
6	3.488	3.504	3.496	3.500	0.006	3.494	3.494	0.002	0.002
7	3.495	3.497	3.496	3.500	0.006	3.494	3.501	0.002	-0.005
8	3.498	3.501	3.500	3.500	0.006	3.494	3.504	0.006	-0.004
9	3.493	3.501	3.497	3.500	0.006	3.494	3.499	0.003	-0.002
10	3.499	3.506	3.503	3.500	0.006	3.494	3.505	0.008	-0.002
11	3.491	3.496	3.494	3.500	0.006	3.494	3.497	0.001	-0.003
12									
13									
14									
15									
16									

OUTSIDE DIA. Permissible (with Ovality) ± 0.012

Tube #	Actual A	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	3.491	3.500	0.012	3.488	3.512	0.003	-0.021
2	3.493	3.500	0.012	3.488	3.512	0.005	-0.019
3	3.487	3.500	0.012	3.488	3.512	-0.001	-0.025
4	3.498	3.500	0.012	3.488	3.512	0.010	-0.014
5	3.494	3.500	0.012	3.488	3.512	0.006	-0.018
6	3.488	3.500	0.012	3.488	3.512	0.000	-0.024
7	3.495	3.500	0.012	3.488	3.512	0.007	-0.017
8	3.498	3.500	0.012	3.488	3.512	0.010	-0.014
9	3.493	3.500	0.012	3.488	3.512	0.005	-0.019
10	3.499	3.500	0.012	3.488	3.512	0.011	-0.013
11	3.491	3.500	0.012	3.488	3.512	0.003	-0.021
12							
13							
14							
15							
16							

OUTSIDE DIA. Permissible (with Ovality) ± 0.012

Tube #	Actual B	Nominal	Tolerance	min allowable dimension	max allowable dimension	Results for min allowable	Results for max allowable
1	3.500	3.500	0.012	3.488	3.512	0.012	-0.012
2	3.496	3.500	0.012	3.488	3.512	0.008	-0.016
3	3.497	3.500	0.012	3.488	3.512	0.009	-0.015
4	3.494	3.500	0.012	3.488	3.512	0.006	-0.018
5	3.497	3.500	0.012	3.488	3.512	0.009	-0.015
6	3.504	3.500	0.012	3.488	3.512	0.016	-0.008
7	3.497	3.500	0.012	3.488	3.512	0.009	-0.015
8	3.501	3.500	0.012	3.488	3.512	0.013	-0.011
9	3.501	3.500	0.012	3.488	3.512	0.013	-0.011
10	3.506	3.500	0.012	3.488	3.512	0.018	-0.006
11	3.496	3.500	0.012	3.488	3.512	0.008	-0.016
12							
13							
14							
15							
16							

Mean OUTSIDE DIA. Permissible +- 0.015									
Tube	Actual A	Actual B	Mean	Nominal	Tolerance	min	max	min	max
1	0.627	0.633	0.630	0.625	0.015	0.610	0.640	0.02	-0.010
2	0.624	0.646	0.635	0.625	0.015	0.610	0.640	0.025	-0.005
3	0.610	0.668	0.639	0.625	0.015	0.610	0.640	0.029	-0.001
4	0.628	0.631	0.630	0.625	0.015	0.610	0.640	0.0195	-0.011
5	0.628	0.641	0.635	0.625	0.015	0.610	0.640	0.0245	-0.005
6	0.621	0.644	0.633	0.625	0.015	0.610	0.640	0.0225	-0.007
7	0.634	0.640	0.637	0.625	0.015	0.610	0.640	0.027	-0.003
8	0.621	0.634	0.628	0.625	0.015	0.610	0.640	0.0175	-0.013
9	0.623	0.641	0.632	0.625	0.015	0.610	0.640	0.022	-0.008
10	0.627	0.638	0.633	0.625	0.015	0.610	0.640	0.0225	-0.007
11	0.614	0.651	0.633	0.625	0.015	0.610	0.640	0.0225	-0.007
12									
13									
14									
15									

OUTSIDE DIA. Permissible +- 0.038								
Tube	Actual A	Actual B	Nominal	Tolerance	min	max	min	max
1	0.627	0.633	0.625	0.038	0.587	0.663	0.040	-0.030
2	0.624	0.646	0.625	0.038	0.587	0.663	0.037	-0.017
3	0.610	0.668	0.625	0.038	0.587	0.663	0.023	0.005
4	0.628	0.631	0.625	0.038	0.587	0.663	0.041	-0.032
5	0.628	0.641	0.625	0.038	0.587	0.663	0.041	-0.022
6	0.621	0.644	0.625	0.038	0.587	0.663	0.034	-0.019
7	0.634	0.640	0.625	0.038	0.587	0.663	0.047	-0.023
8	0.621	0.634	0.625	0.038	0.587	0.663	0.034	-0.029
9	0.623	0.641	0.625	0.038	0.587	0.663	0.036	-0.022
10	0.627	0.638	0.625	0.038	0.587	0.663	0.040	-0.025
11	0.614	0.651	0.625	0.038	0.587	0.663	0.027	-0.012
12								
13								
14								
15								

EXTRUSION INSPECTION SHEET

		SIDE A	SIDE B					ULTRA SONIC MEASURMENTS				
TUBE #	TOTAL LENGTH	DIA two readings	DIA two readings	INSIDE DIA	wall thickness measured w/vern	Strightness at 12" in middle	Rockwell Reading	LOCATION on tube	R1	R2	R3	R4
DWG	129.00"	3.500"		2.250"	0.625"	0.010"	N/A	Middle	N/A			
1	129.00"	3.493"/3.497"	3.491"/3.500"	2.225"	0.627"/0.633"	0.006"	N/A	Middle	0.628"	0.639"	0.646"	0.636"
2	129.00"	3.493"/3.500"	3.493"/3.496"	2.227"	0.624"/0.646"	0.002"	N/A	Middle	0.635"	0.645"	0.636"	0.634"
3	129.00"	3.498"/3.498"	3.487"/3.497"	2.226"	0.610"/0.668"	0.004"	N/A	Middle	0.622"	0.625"	0.642"	0.646"
4	129.00"	3.494"/3.497"	3.498"/3.494"	2.226"	0.628"/0.631"	0.002"	N/A	Middle	0.641"	0.630"	0.629"	0.634"
5	129.00"	3.490"/3.495"	3.494"/3.497"	2.224"	0.628"/0.641"	0.007"	N/A	Middle	0.632"	0.646"	0.639"	0.622"
6	129.00"	3.491"/3.500"	3.488"/3.504"	2.221"	0.621"/0.644"	0.0095"	N/A	Middle	0.639"	0.625"	0.634"	0.633"
7	129.00"	3.490"/3.497"	3.495"/3.497"	2.226"	0.634"/0.640"	0.055"	N/A	Middle	0.623"	0.637"	0.649"	0.634"
8	129.00"	3.491"/3.496"	3.498"/3.501"	2.212"	0.621"/0.634"	0.004"	N/A	Middle	0.634"	0.638"	0.635"	0.631"
9	129.00"	3.493"/3.501"	3.493"/3.501"	2.226"	0.632"/0.641"	0.0045"	N/A	Middle	0.641"	0.632"	0.630"	0.639"
10	129.00"	3.495"/3.501"	3.499"/3.506"	2.228"	0.627"/0.638"	0.004"	N/A	Middle	0.646"	0.633"	0.625"	0.639"
11	129.00"	3.490"/3.499"	3.491"/3.496"	2.226"	0.614"/0.651"	0.007"	N/A	Middle	0.623"	0.641"	0.647"	0.623"
12							N/A	Middle				
13							N/A	Middle				
14							N/A	Middle				
15							N/A	Middle				
PART # D6009-129		P/O# 13346			BATCH # B75634			Notes:				

